REMARKS

Claims 1-42 are currently pending in the application. The Examiner rejected claims 1-4, 7, 8-10, 17-21, 24-27, 34, and 37-38 under 35 U.S.C. 103(a) as being unpatentable over "Data-Over-Cable Service Interface Specifications" by Cable Television Laboratories, Inc. (DOCSIS). Claims 5-6, 11-16, 22-23, 28-33, 35-36, and 39-42 were objected to but would be allowable if rewritten in independent form. Applicants gratefully acknowledge the allowability of the above claims if rewritten in independent form.

The existing independent claims 1, 17, 34 as well as the new independent claims 43, and 48 variably recite "dynamically adjusting the Lookahead Time value ... using the propagation delay data." Furthermore, the propagation delay data is "obtained during ranging procedures".

DOCSIS SP-RFIv1.1-I03 November 5, 1999 (DOCSIS) does not teach or suggest using "the propagation delay to dynamically adjust the LAT value" nor does it teach obtaining a propagation delay "during ranging procedures." In fact, Applicants believe that DOCSIS only describes propagation delay in three sections. DOCSIS describes propagation delay in the Initial Maintenance of Information Elements section 7.1.2.3, Map Transmission and Timing section 7.1.5, and the Protocol Example section 7.1.6 cited by the Examiner.

"7.1.2.3 The Initial Maintenance IE

The Initial Maintenance IE provides an interval in which new stations may join the network. A long interval, equivalent to the *maximum round-trip propagation* delay plus the transmission time of the Ranging Request (RNG-REQ) message (see Section 7.3.3), MUST be provided to allow new stations to perform initial ranging. Packets transmitted in this interval MUST use the RNG-REQ MAC Management message format (refer to Section 6.3.5)."

"7.1.5 Map Transmission and Timing

The allocation MAP MUST be transmitted in time to propagate across the physical cable and be received and handled by the receiving CMs. As such, it MAY be transmitted considerably earlier than its effective time. The components of the delay are:

• *Worst-case round-trip propagation delay* — may be network-specific, but on the order of hundreds of microseconds."

"7.1.6 Protocol Example

This section illustrates the interchange between the CM and the CMTS when the CM has data to transmit (Figure 7-2). Suppose a given CM has a data PDU available for transmission.

Description

1. At time t1, the CMTS transmits a MAP whose effective starting time is t3. Within this MAP is a Request IE which will start at t5. The difference between t1 and t3 is needed to allow for:

• *Downstream propagation delay* (including FEC interleaving) to allow all CMs to receive the Map.

• Processing time at the CM (allows the CMs to parse the Map and translate it into transmission opportunities)

• *Upstream propagation delay* (to allow the CM's transmission of the first upstream data to begin in time to arrive at the CMTS at time t3)."

It should be noted that DOCSIS describes only describes maximum propagation delay. In Section 7.1.2.3 and 7.1.5, propagation delay is explicitly stated to be the maximum propagation delay. In Section 7.1.6, DOCSIS describes the interchange of a MAP message to allow all of the cable modems to receive the message. By including all cable modems, a maximum propagation delay is needed. As noted in section 7.1.5. above, the propagation delay is typically a set number (hundreds of microseconds) that is not determined during ranging procedures for each cable modem.

The use of only the maximum propagation delay and not a propagation delay obtained during ranging procedures for a particular cable modem is consistent with the conventional techniques described in the present application. As noted on page 10, lines 9-16 of the present application, "a conventional technique for determining the propagation delay value for a selected upstream channel is to calculate a maximum propagation delay value based upon the worst-case scenario of a cable modem being physically connected to the upstream channel at a farthest possible distance from the CMTS. Typically, in conventional cable networks, the farthest possible distance between a cable modem and the CMTS is about 100 miles. Using this worst case scenario, conventional cable networks typically estimate the maximum roundtrip propagation delay for an upstream channel to be about 1.6 milliseconds (0.8 milliseconds one-

way)."

Consequently, DOCSIS only has a single propagation delay value – the maximum propagation delay value. It would not be obvious to "dynamically adjust the Lookahead Time value ... using the propagation delay data" because in DOCSIS, there is only a single maximum propagation delay value and consequently no dynamic adjustment would occur based on using this static value.

By contrast, the techniques of the present invention recognize benefits of dynamically adjusting the value using the obtained propagation delay value. The propagation delay values are obtained during ranging despite often increasing the complexity of the system. According to various embodiments, the propagation delay values are obtained during ranging procedures for each particular cable modem. Conventional techniques had a fixed maximum propagation delay value used for all cable modems. Furthermore, the LAT value is dynamically adjusted using the obtained propagation delay despite also often increasing the complexity of the example. In conventional systems, the LAT value is determined using a fixed, known propagation delay used for all cable modems. However, the independent claims now recite using propagation delays specific to each cable modem.

For example, on page 4 lines 19-29 of the specification, "many of the delay values inherent in the network vary depending upon specific network conditions, conventional cable networks are typically configured to operate using maximized delay values based upon anticipated worst-case conditions in the network. As a result, optimal performance of data transmission across the network is compromised." Consequently, the independent claims of the present invention recite "dynamically adjusting the LAT value using the propagation delay data" where the propagataion delay data is obtained from "ranging procedures performed between the access control system and the node."

In view of the foregoing, Applicants believe all rejections to the independent claims have been overcome thereby placing all independent and dependent claims now pending in this application are in condition for allowance. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (510) 843-6200.

Respectfully submitted,

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